



Science Diplomacy Alert

A Monthly Newsletter on S&T, Science Policy and Diplomacy

Focus

BRICS and Inclusive Global Technology Order: Putting Humanity-First



Under its BRICS 2026 Chairship, with the theme of "Building Resilience and Innovation for Cooperation and Sustainability", India stands poised to lead this transformation. By championing a framework that is inclusive and development-oriented, India can help forge a more equitable, representative, and just global digital order. Dr Amit Kumar writes.

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SCIENCE POLICY & DIPLOMACY

International S&T Cooperation

India and Luxembourg Explore Cooperation in Space and Emerging Technologies

India and Luxembourg discussed expanding bilateral cooperation in space, artificial intelligence, quantum technologies and life sciences during a meeting between Union Minister Dr. Jitendra Singh and Luxembourg Minister Lex Delles. Both sides explored opportunities for institutional and industry partnerships, including satellite technologies, high-performance computing, biotechnology and joint research.

South Korea and Kazakhstan Sign Science and Technology Cooperation Agreement

South Korea and Kazakhstan signed an agreement on science and technology during Kazakh President Kassym-Jomart Tokayev's visit to Seoul. The two countries also agreed to strengthen cooperation in the peaceful use of nuclear energy, critical minerals, energy, crude oil and artificial intelligence, reflecting efforts to expand bilateral collaboration in strategic and emerging technologies.

India-Germany Strengthen Cooperation on Energy Security and Low-Carbon Development

Union Minister Shri Manohar Lal met German Federal Minister Carsten Schneider in New Delhi to discuss bilateral cooperation in the energy sector. Discussions focused on energy security, electrification, low-carbon development, carbon markets and supply-chain diversification. Both sides reaffirmed their commitment to advancing a secure, affordable and sustainable energy future through strengthened bilateral cooperation.

India Explores Agricultural Research and Innovation Cooperation with Malaysia, Timor-Leste and Myanmar

India held bilateral discussions with Malaysia, Timor-Leste and Myanmar on strengthening agricultural cooperation, including joint research, technology exchange and institutional partnerships. Discussions also covered food security, agricultural trade, capacity-building and the exchange of scientific expertise to address shared challenges in agriculture and allied sectors.

India-France Space Cooperation Expands to Human Spaceflight, Start-ups and Innovation

Union Minister Dr. Jitendra Singh met a French delegation led by Minister Philippe Baptiste in New Delhi on 28 September 2026 to discuss expanding bilateral cooperation in space, science and technology. Key areas included the TRISHNA satellite mission, India's Gaganyaan programme, microgravity research and collaboration between industries and start-ups. Building on over six decades of space cooperation, the discussions also explored opportunities under the India-France Year of Innovation 2026, with India's growing ecosystem of over 400 space start-ups offering new avenues for partnership.

India and Sweden Explore Cooperation in AI and Digitalisation

The IndiaAI Mission and a Swedish delegation under the Sweden-India Technology and AI Corridor (SITAC) held discussions in New Delhi on bilateral cooperation in artificial intelligence and digitalisation. The dialogue explored opportunities for collaboration in industrial AI, responsible AI, compute infrastructure, skills development, pilots and joint technology development, bringing together government representatives and companies from both countries.

India-Belgium Deepen Cooperation in Science, Technology, Green Energy and Emerging Technologies

During Belgian Prime Minister Bart De Wever's visit to India, the two countries agreed to strengthen cooperation in research and higher education, semiconductors, AI, space technologies, life sciences and innovation. Both sides agreed on renewed cooperation in renewable energy, including green hydrogen, solar energy, energy storage and offshore wind, alongside deeper industry-academia partnerships and startup collaboration.

Emerging Tech & Governance

India-Nepal Advance Collaboration on Multilingual AI through BHASHINI

The Digital India BHASHINI Division, in collaboration with the Embassy of India in Kathmandu and Kathmandu University, organised the BHASHINI SANGAM International Engagement Workshop to strengthen India-Nepal cooperation in multilingual Language AI. Building on the MoU between DIBD and Kathmandu University, discussions focused on co-creating language technologies, datasets and locally relevant applications for Nepali, Maithili, Newari, Tamang, Gurung and other underrepresented languages, with emphasis on traditional scripts, voice-based solutions, language preservation and inclusive digital access.

RRI Researchers Demonstrate Timing-Based Control of Quantum Entanglement

Researchers from the Raman Research Institute, the University of Calgary and Louisiana State University demonstrated that a precisely timed flip operation can delay or prevent the

sudden loss of quantum entanglement in an optical experiment. The findings could inform strategies to preserve quantum information for longer in quantum computing systems.

G20 Ministers Endorse Carolina Principles for Emerging Technologies

G20 ministers endorsed the Carolina Principles for Emerging Technologies at a meeting in Chapel Hill, outlining policy approaches to support innovation, research and technology adoption. The principles cover public–private research funding, research infrastructure, regulatory sandboxes, technology commercialisation, adaptive regulation and international cooperation.

NIELIT and Intel India Launch Agentic AI Skilling Programmes

NIELIT and Intel India launched two Agentic AI skilling programmes to strengthen workforce readiness for an AI-driven economy. The initiative focuses on practical training in AI agents, workflow automation and the design and deployment of AI systems, expanding access to industry-aligned learning across India.

Quantum Technology Roadmap Released

NATO released a roadmap to accelerate the adoption of quantum technologies. It focuses on quantum computing, communications and sensing, with priorities including testing defence applications, developing common standards, strengthening interoperability and adopting post-quantum cryptography. The roadmap also emphasises collaboration with industry and academia to advance quantum capabilities and address emerging security risks.

Events & Meetings

New Delhi Declaration Adopted at the XVIII BRICS Summit 2026

The XVIII BRICS Summit was held in New Delhi on 12–13 September 2026 under India’s Chairship, guided by the theme ‘Building for Resilience, Innovation, Cooperation and Sustainability’. The New Delhi Declaration, marking the 20th anniversary of BRICS, reaffirmed its commitment to cooperation across its three pillars: political and security; economic and financial; and cultural and people-to-people ties. India’s BRICS Chairship 2026 also saw over 400 meetings organised across 30 Indian cities.

International Space Summit Held

Held in Paris on 9-10 September 2026, the summit brought together 90 national delegations and international organisations. Key outcomes included an ESA–European Commission declaration on in-space operations and services, alongside commitments to space sustainability, international cooperation and improved coordination of satellite orbits and radio frequencies.

SEMICON India 2026 Held

SEMICON India 2026 was held in New Delhi during 17-19 September 2026. It brought together over 600 exhibitors, representatives from 52 countries and more than 150 speakers under the theme “Silicon to Systems: Building the Ecosystem”. It led to 56 MoUs, announcements and strategic initiatives spanning semiconductor design, fabrication, advanced packaging, materials, equipment, artificial intelligence and workforce development.

UNESCO Global Forum on the Ethics of AI 2026

The 4th UNESCO Global Forum on the Ethics of AI brought together policymakers, researchers and other stakeholders to discuss responsible and ethical AI governance. The forum focused on implementing UNESCO's Recommendation on the Ethics of AI, with discussions addressing AI governance, human rights, sustainability and emerging challenges from rapidly advancing AI technologies.

INDIAN SCIENCE NEWS

India Launches Bio-Invest to Connect Biotechnology Startups with Investors

Union Minister Dr. Jitendra Singh launched Bio-Invest, a platform to strengthen engagement between biotechnology innovators and investors and accelerate private investment in the sector. The inaugural session brought together 20 biotechnology and deep-tech startups and approximately 50 investors to facilitate partnerships, support commercialisation and scale promising innovations. The initiative aims to strengthen India's biotechnology ecosystem and help translate research into market-ready products.

Researchers at JNCASR Discover Wave-Like Heat Transport for Waste-Heat Recovery

Researchers at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru, have identified an unusual wave-like heat transport mechanism in thallium copper selenide (TlCu_5Se_3), achieving a thermoelectric figure of merit (ZT) of 1.7. The findings could improve the conversion of industrial waste heat into electricity, with potential applications in power plants, steel production, automobiles, batteries and data centres.

ISRO Successfully Launches GSLV-F17 Carrying EOS-05

ISRO successfully launched GSLV-F17 carrying EOS-05, India's first imaging satellite designed to operate from geosynchronous orbit. The mission strengthens India's Earth-observation capabilities, with potential applications in disaster monitoring, agriculture, forestry and water-resource management through frequent imaging of the same region.

Peptide-based Biomaterials for Self-Powered Healthcare Developed

Researchers from CeNS Bengaluru, IISER Kolkata and JNCASR Bengaluru have developed peptide-based biomaterials with enhanced piezoelectric properties by controlling molecular self-assembly. The innovation could enable biocompatible materials for self-powered medical sensors, wearable electronics and implantable healthcare devices.

Sophisticated Analytical Instrument Facility, Advanced Instrumentation Facility and Panjab University Technology Innovation Platform Inaugurated

Hon'ble Vice President C. P. Radhakrishnan inaugurated the Sophisticated Analytical Instrument Facility, Advanced Instrumentation Facility and Panjab University Technology Innovation Platform in Chandigarh. The facilities aim to strengthen research capabilities across scientific and engineering disciplines and support the university's startup and innovation ecosystem.

CSIR Transfers Indigenous Technologies for Sustainable Leather Processing and Safer, Greener Roads

CSIR transferred four technologies developed by CSIR-CLRI, Chennai, and CSIR-CRRI, New Delhi, to industry. These include processes to convert industrial waste into valuable products, a glare mitigation device for four-wheelers, and a cold-application pothole repair mix. The technologies aim to promote circular-economy practices, reduce environmental pollution, improve road safety and accelerate the commercial deployment of indigenous research.

LISA: Using Light to Restore Cell Division

Researchers at IISc develop Light-Induced Spindle Activation (LISA), a technique that uses blue light to activate Aurora A kinase and restore spindle assembly in cells lacking centrosomes. The method offers new insights into the mechanisms of cell division and could help identify Aurora A kinase-specific targets, paving the way for research into potential therapeutic strategies and drug development.

CSIR-NIScPR Adopts SARAL AI to Make Scientific Research Accessible to Wider Audience

CSIR-NIScPR is leveraging SARAL AI, an initiative of the Anusandhan National Research Foundation (ANRF), to convert research papers published in its journals into accessible videos. Following a hands-on workshop attended by over 90 journal editors and researchers, the initiative aims to improve science communication and expand access to Indian research, particularly among students and the general public, through digital platforms such as YouTube.

DSIR-CRTDH at IIT Kharagpur Enters Sustainable Phase

The Common Research and Technology Development Hub (CRTDH) on Affordable Healthcare at IIT Kharagpur has transitioned to a self-sustaining model, continuing to support startups, MSMEs and innovators in healthcare technology development. The Hub has facilitated over 20 technology transfers and supports the deployment of affordable diagnostic technologies in underserved rural communities.

CeNS Researchers Develop Metal-Free Material for Solar-Driven Hydrogen Production

Researchers at CeNS, Bengaluru, have developed a metal-free organic material that uses self-assembling molecules to improve solar-driven water splitting for hydrogen production. The material generated nearly 18 per cent higher photocurrent than its bulk counterpart, offering a potential pathway towards more sustainable photocatalysts for green hydrogen and solar fuel technologies.

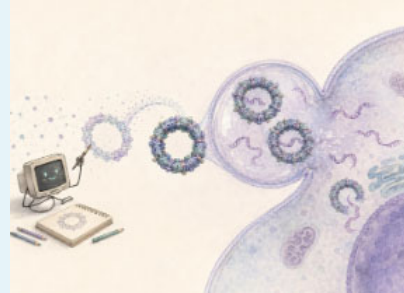
SPROUT Facility to Accelerate Climate-Resilient Crop Development Inaugurated at BRIC-NIPGR, New Delhi

The SPROUT facility at BRIC-NIPGR, New Delhi, will accelerate climate-resilient crop development through precision trait evaluation under different environmental conditions. Complementing this, NIPGR's SpeedSeed technology can reduce the chickpea generation cycle to around 40 days, shortening breeding timelines and supporting climate-resilient agriculture.

ADVANCES IN S&T

AI-Designed Proteins Enable a New Generation of RNA Transporters

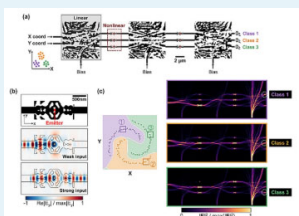
The Problem: RNA-based therapeutics use RNA to instruct cells to produce specific proteins, including proteins that can modify genes. However, the RNA must reach the inside of cells intact to function effectively. Existing delivery systems, including virus-derived vehicles and lipid nanoparticles, have limitations, prompting researchers to explore more efficient and selective RNA transport mechanisms.



The Method: Researchers from Helmholtz Munich and the Technical University of Munich designed an RNA transporter, STV-C8, using a combination of functional protein building blocks and a structural protein designed with generative AI. After testing more than 100 variants, they found that structures with non-natural quantum nanostructures could make AI more energy-efficient geometries performed particularly well. In cell culture, STV-C8 delivered RNA more efficiently than the virus-like particles and lipid nanoparticles tested, requiring substantially less RNA to achieve comparable protein production. The team also demonstrated RNA delivery in mice and used the transporter to deliver CRISPR/Cas9 components into pig muscle, successfully removing a disease-relevant section of the dystrophin gene.

Future Prospects: STV-C8 represents an experimental platform with potential applications in RNA therapeutics and gene editing, including research into genetic disorders such as Duchenne muscular dystrophy. Further studies are needed to establish how precisely the transporter can target specific cell types, how it distributes throughout the body, and its safety and efficacy. The researchers plan to further develop the platform for therapeutic applications and explore its commercialisation through a spin-off company.

Quantum Nanostructures Could Make AI More Energy-Efficient



The Problem: The growing scale and complexity of artificial intelligence systems, including large language models and image-generation tools, are increasing energy consumption. Optical neural networks, which use light rather than conventional electronic processing, could offer faster and more energy-efficient computing. However, they face a key limitation: the difficulty of achieving the nonlinear operations required to learn complex patterns without consuming excessive energy.

The Method: Researchers at the University of Wisconsin–Madison used computational simulations to design quantum nanostructures incorporating quantum emitters, which exhibit strong optical nonlinearity. By optimising the nanostructure surrounding a vacancy colour centre, the team demonstrated theoretically that the design could enable nonlinear operations in optical neural networks. The simulations indicated potential power consumption seven orders of magnitude lower than that of systems using conventional optical materials.

Future Prospects: The findings could advance the development of faster, more energy-efficient optical neural networks for AI applications. The researchers suggest that quantum dots and neutral atoms could also serve as quantum emitters in future designs. Advances in quantum photonics may help translate the proposed approach into practical optical computing systems.

INSIGHTS & RESOURCES

WIPO Global Innovation Index 2026: Powering Entrepreneurs at the Frontier of Science

The World Intellectual Property Organization (WIPO) released the Global Innovation Index (GII) 2026 on 29 September 2026 in Geneva, Switzerland. The 19th edition evaluates the innovation performance of 139 economies using around 80 indicators. This edition focuses on translating scientific breakthroughs into commercial ventures and new industries, with particular attention to artificial intelligence (AI), deep science and emerging technologies. It also examines innovation trends across income groups and regions, highlighting the progress and challenges of developing economies.

Key Highlights :

- **Global Innovation Rankings:** Switzerland, Sweden, the United States, the Republic of Korea and Singapore retained the top five positions. China ranked 10th, remaining the only middle-income economy among the top 30.
- **Innovation Progress in Developing Economies:** China, India (38th), Viet Nam (43rd), Türkiye (45th), the Philippines (52nd), Morocco (54th) and Indonesia (55th) have made significant long-term progress since 2013. Their experiences demonstrate how high-tech trade, digital services, entrepreneurship, intellectual property and integration into global value chains can strengthen innovation performance.
- **Innovation Overperformers:** The report identifies 21 economies performing above expectations for their level of economic development, including 15 lower-middle- or low-income economies. India and Viet Nam have maintained this status for 16 consecutive years. Bhutan joins the group for the first time, while Pakistan, Mozambique and the Republic of Moldova return to it. Sub-Saharan Africa accounts for the largest number of overperformers, with seven economies.
- **Regional Innovation Gaps:** Central and Southern Asia has strengthened its position relative to Latin America and the Caribbean, particularly in innovation outputs. Sub-Saharan Africa demonstrates varied innovation capabilities, but continues to face gaps in human capital and research, infrastructure and innovation outputs. These differences underline the importance of strengthening research ecosystems and links between knowledge creation and commercialisation.
- **Growth of Deep Science Startups:** More than 30,000 deep science startups have been established globally since 2000, with a combined valuation of US\$7.6 trillion. Although the United States and China host the largest numbers, startup growth since 2020 has been particularly strong in Central and Southern Asia (118 per cent), Latin America and the Caribbean (71 per cent), and Sub-Saharan Africa (65 per cent).
- **Research and Development Investment:** Global R&D expenditure grew by more than 3.3 per cent in real terms in 2025 and is projected to reach US\$3.4 trillion in 2026. Growth in R&D spending is increasingly evident in middle-income economies, including Egypt, Indonesia, Malaysia and Viet Nam.

- **Venture Capital Trends:** Global venture capital funding increased by 28 per cent to US\$510 billion in 2025, with AI-related ventures accounting for 53 per cent of global venture capital deal value. In Africa, startups raised approximately US\$3.2 billion in 2025, a 40 per cent increase from the previous year.
- **Commercialisation of Scientific Research:** The report emphasises the importance of connecting scientific research with entrepreneurship, finance, specialised infrastructure and markets. It identifies funding gaps between research, proof-of-concept development, pilot projects and commercial deployment as important barriers to scaling deep science ventures.

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